*The Advancement of Science*: 1920. Addresses delivered at the 88th Annual Meeting of the British Association for the Advancement of Science. Cardiff, August, 1920. (London: John Murray, n.d.) Price 6*s*. net.

IN this volume are published the presidential addresses delivered at the recent meeting of the British Association at Cardiff. Such a collection, representing, as it does, the views of the leading authorities on progress made in various departments, and discussing some problems of prime interest, will be welcome to all students of science as well as to many members of the educated public. We hope the demand for the volume will justify the attempt of the Association to secure a wider circle of readers for the most interesting contributions to its annual meeting.

*A Handbook of Physics and Chemistry*. By H. E. Corbin and A. M. Stewart. Fifth edition. Pp. viii + 496. (London: J. and A. Churchill, 1920.) Price 15*s*. net.

THE requirements of the new syllabus for the First Examination in physics and chemistry of the Conjoint Board of the Royal Colleges of Physicians and Surgeons have made it necessary to double the size of the volume issued in 1899. Short articles on statics, hydrostatics, expansion, refraction, absorption spectra, current electricity, ionisation, and radio-activity have been added in order to meet the new syllabus, and much new matter has been inserted with the view of making the book more useful to students preparing for other elementary examinations in physics and chemistry.

*Common Diatoms*. By Thos. K. Mellor. Pp. 16 + plates. (London: William Wesley and Son, 1920.) Price 6*s*. net.

THIS little pamphlet consists of eight pages of introduction, followed by a general index and seven plates of diatoms. The author's intention is to illustrate such diatoms as are usually found on "circle" slides sold by opticians, from such districts as England, Japan, Hungary, New Zealand, Istria, Samoa, the Adriatic Sea, Maryland, etc. The seven plates contain about 400 figures, and are fairly well drawn.

The introductory remarks are of a popular description, and do not profess to deal with diatoms from a scientific point of view.

*Problems in Physical Chemistry: With Practical Applications*. By Dr. Edmund B. R. Prideaux. Second edition, revised. Pp. xii + 294. (London: Constable and Co., Ltd., 1920.) Price 18*s*. net.

DR. PRIDEAUX's book, in its first edition, was found useful by teachers and students of physical chemistry, and served a very important purpose by assisting in directing the teaching of the subject into practical and intelligible channels. The new edition has been carefully revised and improved in many respects. The high price of the book, which is somewhat poorly bound and printed on not very good paper, will be the main drawback to its popularity among students.

## Letters to the Editor.

[*The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts intended for this or any other part of* NATURE. *No notice is taken of anonymous communications.*]

### The British Association.

THE Cardiff meeting of the British Association was pleasant and profitable in various ways, but the membership in an important and prosperous city like Cardiff might have been larger, and a certain amount of apathy on the part of the public in general to the presence of the Association was noticed. The Press did its best, but perhaps an influx of material prosperity has rendered folk temporarily callous to other forms of activity. My recollection of the Cardiff meeting in 1891 is that it excited more local interest—perhaps because it was the first in the city; perhaps also because the meeting included the week-end, extending from Wednesday to Wednesday, instead of ruthlessly encroaching on the four chief working days of the week and beginning sectional operations ten hours before the president's opening address. It is understood that future meetings will return to pre-war conditions in this and other respects. Other improvements may be desirable, so the manifesto of your Cardiff correspondent, Dr. R. V. Stanford, on p. 13 of NATURE of September 2 is opportune and timely.

The British Association differs from other learned societies in that it does address the general public, and travels from place to place in order to reach a wide constituency. In so far, therefore, as it takes the easier course and caters merely for specialists, it is not fully executing its mission. Its function might be described as bringing the general public into personal contact with a scientific discoverer and giving them some inkling of his methods and results. Technicalities are not always inappropriate, so they be suitably expounded; for no one can suppose that scientific work is a simple and easy matter readily understanded of the people.

If the public were treated to nothing but the superficial froth they would rightly feel defrauded; they wish to realise that a plenitude of coherent material lies beneath the surface, much of it necessarily rather deep. The enthusiasm of a scientific worker is, or should be, contagious; and an impression of real value and interest can be produced, in spite of a plentiful lack of understanding.

Moreover, though it is difficult to overestimate the ignorance of the bulk of the population, there are likely to be in every civic community a few young minds, instinctively eager and unconsciously able, who may be stimulated by a discourse from a great man and become themselves disciples, and ultimately even co-workers. The awakening of one such youth per meeting would be well worth while; nor is it too much to expect. No one can tell beforehand what particular seed will come to fruition, and instances of such awakening in the past are historic. What is called science-teaching at schools has been known before now to have a depressing effect; direct aiming at a result may not achieve it; unorganised and indirect impersonal instruction, coupled with unconscious personal influence, may occasionally be far more stimulating.

To come to details, avoiding every sort of contemporary allusion and speaking quite generally:

The President's Address should, as a rule, deal with some comprehensive and enlightening theme; but the president is an individual liable to be overweighted by the opportunity for a responsible, more or less ponderous, utterance, and it is useless to legislate for an individual.

The function of the two evening lectures is fairly understood, and great trouble is sometimes taken over their illustration. They can be approximately on the lines of a Friday evening discourse at the Royal Institution, but should be still more popular, because the audience, for the most part, will not be so experienced and specifically cultivated. They should not, of course, be of the mere elementary "popular lecture" type, and the manner of presentation should be such as to arouse admiration even in those specialists who are learned in the particular subject treated of. But whereas at the Royal Institution it is customary to hear a man discourse on his own investigations, no such tradition naturally exists at the British Association; the work of a foreigner or of a recluse may be described, or any other topic dealt with which either is in the public mind already or may be conveniently introduced there. These lectures are also an opportunity for interesting not only the general public, but also the working members of the Association belonging to other sections, who are glad of an opportunity of hearing something authoritatively and well expounded by an expert in some branch of science other than their own.

If examples are permissible, Clerk Maxwell's discourse on "Molecules" in 1873 at Bradford was not only profoundly, absorbingly, interesting at the time of delivery, but was a genuine elucidation of the molecular problems of that day and of the kinetic theory of gases; and Huxley's discourse on "Animal Automatism," the year afterwards at Belfast, was a marvel of eloquence free from adventitious aids or accessories of any kind.

So far agreement may be expected; difficulties begin when we contemplate the work of the sections. Here a certain amount of specialisation is inevitable, and the public who attend the sections expect, and on the whole enjoy, proceedings rather out of their depth. Yet still there are ways of interesting experts without being wholy unintelligible to everyone else. Dullness, indistinctness, inaudibility, and the absence of clarity, are not appreciated even by experts, though much may be forgiven when the matter is new or important. But liveliness and suggestiveness are specially appropriate at sectional meetings, attended as they are by kindly hosts who are anxious to get some glimmering of what science "feels like" to those engaged in it, whom they are for the nonce entertaining. It is probably unwise to limit the proceedings to the delivery of set papers according to a prearranged and rigid programme.

Of late years there has been a tendency to curb and curtail discussions for the sake of completing each item of a programme so far as possible to time. But in the old days discussions were often the most lively, and sometimes the most instructive and suggestive, part of the meeting. Kelvin and Stokes, Maxwell and Rayleigh, FitzGerald and Larmor—these were men worth hearing; and, whether they happened to contribute papers or not, their presence was stimulating and their remarks encouraging to the younger men. It was at one of these meetings long ago that the then unknown J. P. Joule was "discovered," and many another young man was brought into notice by the enthusiasm of Sir William Thomson and the giants of his era. Then again, Cayley and Sylvester, H. J. S. Smith, W. K. Clifford, and one or two still living, shone brilliantly in pure mathematics; and there were the Astronomers as well. Blackboards full of equations were far more frequent than the dim and depressing atmosphere required for lantern-slides, and the audience found this manner of exposition exhilarating in its own peculiar way. To see physical results emerging from chalk and duster is always an astonishing and edifying spectacle. The realities of physical investigation, and their obviously recondite character, contribute to respect. Brilliant mathematical exposition is both cheaper and easier, in a peripatetic society, than brilliant experimenting; and if both are forbidden, the true atmosphere of science is not represented. Diagrams are more trouble than lantern-slides, but are in many respects better.

I see I am speaking of the *personnel* of Section A only—it is inevitable—but I suppose that something of the same sort must have been occurring in other of the older sections; certainly a large *clientèle* assembled whenever Huxley was expected to speak, and sometimes he was quite reasonably technical in substance as well as literary in form. Are we to conclude that there were giants in those days, and despair of maintaining the standard? There is splendid work being done now, but the conditions somehow seem less attractive.

Let me be not misunderstood as making any complaint! The proceedings in Section A were brilliant this year, from the president's address downwards, and one came away full of admiration for the work of the present generation; but the programme was rather too full. So it used to be long ago also, though four hours were then given to it instead of three, and no kind of time-table was attempted. When Sir William Thomson got into his stride few presidents had the hardihood to check him or to curtail his sometimes rambling eloquence; while his young disciples were conscious of enthusiasm and enlightenment, commingled with occasional boredom, and the audience was often delighted with his vivacity, however little they were able to follow.

I feel sure that among the younger men now there are some whose more frequent contributions to a discussion would be most welcome, but the incubus of a set programme and limited time, together with apparently an over-modest expectation of hypercriticism from their immediate fellows, seems to restrain them. The secretaries of Sections used not to limit their activities to providing for the revelations of others; they shed a light of their own. No self-denying ordinance was inflicted on the president, the vice-presidents sat on the platform, and when a lively discussion seemed to be beginning the exigencies of the programme were ignored. The discussions I speak of were not formally arranged; they arose spontaneously. I remember, for instance, a lively passage-of-arms between Herbert Spencer and Clerk Maxwell on a thermodynamical subject. Sometimes there were real controversies, and occasionally some dissipation of energy in the form of heat. The modern prearranged discussions are an innovation—possibly a good one—but in organising such a discussion it has turned out to be a mistake to fire off a group of more or less allied papers by way of an opening. Disconnected and separately conceived papers do not really open; they are apt to dissipate interest and stop real discussion, partly by too extended a range, partly by consumption of time.

The procedure of a "debate," one proposer and one opposer, followed by spontaneous and unprepared speeches which really deal with the points raised, would seem a not impossible ideal.

It must be admitted that the more elastic and semi-random procedure of old days sometimes entailed disappointment, especially among the butterfly visitors who flitted from section to section trying to be present wherever a well-known speaker was on his feet. A rather futile proceeding it usually was, and yet there was merit in it from the missionary point of view. But the butterflies must take their chance; it is the more steady and persevering insects for whom we should aim at providing honey.

How to do it I confess I know not with any certainty; yet it must be known beforehand, in a general way, that one or two subjects will in all probability prove attractive, and it is a pity when, through lack of collaboration between the sections, a number of such attractions compete for attention on a single day.

The General Secretaries have striven this year to unite the office-bearers of the different sections, and generally to carry forward or renew the old traditions so far as possible. It may be hoped that their efforts will have a good effect in the future.

OLIVER J. LODGE.

Normanton, Lake, Salisbury, September 10.

P.S.—Since writing the above I have seen your leading article in NATURE of September 16. I perceive that you hold views similar in many respects to my own, and I anticipate that many readers of NATURE will be in agreement, now that you have given them an opportunity of reconnoitring the whole position. O. J. L.

September 17.

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ALLOW me to express my concurrence in the view presented in the leading article in NATURE of September 16 as to the necessity for a re-organisation—a re-adjustment to the needs of the day—of the British Association for the Advancement of Science. The Association has been allowed to develop and grow in various directions without sufficient control or consideration as to how it may best serve the purpose for which it exists. It was at first a society of a missionary character, aiming at spreading in the dark regions of these islands a knowledge of and interest in science. Soon it added to this purpose that of an annual picnic and friendly gathering of workers in science. Then followed the gathering of funds by fees for membership; the application of those funds to pay, here and there, for research. Later ensued an extended and overwhelming creation of "sections," so as to give all sorts of people a meeting ground for discussion and, incidentally, for self-advertisement. The result of the last step was an embarrassing demand for meeting-rooms and committee-rooms to be provided by the town which had invited the Association to give it a visit. At the same time the subdivision of subjects led to a dilution of quality, and a free bid for popularity and newspaper notice—which has rendered the proceedings of the Association of diminishing interest and value to the educated classes, not only in the locality of its meeting, but also throughout the country. Serious workers in science are now well provided in our great cities with societies and journals by aid of which new work may be discussed. No one is particularly anxious to follow the lengthy, and frequently non-authoritative, disquisitions which the sectional meetings, as at present organised, tend to promote.

The annual meetings of the Association might be carefully arranged beforehand by the executive so as to secure the consideration and clear exposition to the public of a few definite matters of actual moment. The "sections" of the meeting could with great advantage be reduced to four, and the addresses to be given by the president of each section, and also the "papers" accepted for consideration, limited to subjects chosen by the executive of the Association. The individuals chosen to preside or to introduce a subject should be men whose names and works are such as to command the attention and presence of the leaders of thought and social life in the district where the meeting is held.

The only wise alternative to this reconstruction seems to me to be a frank restriction of the meetings of the Association to men from all parts engaged in scientific work, glad to meet one another once a year in pretty and suitable spots (such as our old university towns and smaller cathedral cities), there to exchange in more or less intimate meeting—without the disturbing influence of newspaper reporters and notoriety hunters—recitals and exhibitions of the progress of their researches. Such are (or were) some of the associations of scientific workers in Continental countries. Meetings of this class involve little or no expense or trouble to their participants. The use for a week of a "refreshment hall" and public garden is all that is needful for the gatherings of the hundred or two *savants* who alone are eligible as members or anxious to be present. These meetings are often delightful, and lead to informal and productive discussions and personal friendships of permanent value.

I think that our "British Association" is in an unhealthy condition owing to the attempt made by it—not deliberately, but by constitutional looseness of purpose—to combine the features of a friendly picnic and smoking debate with the work of a national conference dealing (under the disadvantage of public ignorance and journalistic inaccuracy) with great questions of national importance. A choice must be made between "picnic" and "conference." I should prefer the picnic. E. RAY LANKESTER.

September 17.

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YOUR criticism of the British Association, that it fails to touch our national life, is most opportune; but whereas you imply merely that it is decadent, to me it seems to be practically defunct. An active worker on its behalf in the past, I have little hope of its resuscitation and doubt if it can ever again fulfil the desires of its early promoters, who undoubtedly held its primary function to be that of advancing public appreciation of scientific discovery. I have always deplored our failure to appeal to the public. Seemingly, the spirit of sacrifice is gone out of science; strange to say, the herd instinct is altogether wanting in our society, so uncontrolled is our individuality. The assumed author of "The Beggar's Opera," after remarking of his characters, "There's not an honourable man among them, nor an honest woman," proceeds to say, "but they are all human." So are the present exploiters of the British Association, though were it not human to be selfish some might even dub them inhuman on account of the narrowness of their outlook and their disregard of public needs.

The neglect of science by the nation has long been the favourite text of the scientific preacher; it occurs to none to consider how complete is the neglect of the nation of which scientific workers have long been consistently guilty. Few seem to realise how great has been our failure of late to make any concerted effort to enlighten the man in the street, how little right we have to despise his ignorance. Scientific jargonese so fills the air that it would be refreshing to go back